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On the taxonomy, bionomics, and distribution of *Platyola balcanica*, a species with a remarkable ophthalmopolymorphism (Coleoptera: Staphylinidae, Aleocharinae)

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Abstract: *Platyola austriaca* SCHEERPELTZ 1959, nov.syn., is placed in synonymy with *P. balcanica* SCHEERPELTZ 1958. Lectotypes are designated for both *P. balcanica* and *P. austriaca*. Intraspecific variation of external characters such as body size, body shape, coloration, and particularly eye size is enormous. The genitalia and external characters of *P. balcanica* are illustrated. Ecological data are compiled and the distribution of this Ponto-Mediterranean species is mapped. It is reported from Turkey for the first time.

Key words: Coleoptera, Staphylinidae, Aleocharinae, *Platyola*, Western Palaearctic region, taxonomy, new synonymy, lectotype designation, ophthalmopolymorphism, distribution, ecology.

Introduction

The aleocharine genus *Platyola* MULSANT & REY 1875, had been attributed to the Oxy-podini until it was discovered that the tarsal formula was 4-5-5 (not 5-5-5) and the genus was moved to the Athetini (LOHSE 1989). SMETANA (2004) lists only four species from the Palaearctic region. However, several genus group names (*Ganglbaueria* LIKOVSKÝ 1984, *Mimacrotona* CAMERON 1920, *Ommatidiosipalia* SCHEERPELTZ 1963, *Rhopaletes* CAMERON 1939, *Venetiella* PACE 1975) have recently been placed in synonymy with *Platyola* (PACE 1987, 2005), and an additional species has been described from Turkey (ASSING 2006). As a result, the Palaearctic fauna currently comprises 17 species, seven of which occur in the Western Palaearctic exclusive of Afghanistan.

At least the Western Palaearctic species appear to have a cryptic endogean habitat, as can be inferred from the rarity of records and the more or less reduced pigmentation of the species. In addition, four of the species have reduced wings and are anophthalmous or subanophthalmous (ASSING 2006; GANGLBAUER 1895; PACE 1975; SCHEERPELTZ 1963), which is evidently one of the main reasons why, except for the anophthalmous *P. caeca* ASSING 2006, all of them were originally described in other genera and only later transferred to *Platyola*: the anophthalmous *P. berica* (PACE 1975) from *Venetiella* PACE 1975, the anophthalmous *P. solifuga* (GANGLBAUER 1895) from *Leptusa* KRAATZ 1856 and *Ganglbaueria* LIKOVSKÝ 1984, and the subanophthalmous *P. hickeri* (SCHEERPELTZ)

from *Sipalia* Mulsant & Rey 1853 (now on the official list of rejected and invalid generic names).

In a key to the three *Platyola* species known to him at the time, Scheerpeltz (1959) distinguishes *P. fusicornis* (Mulsant & Rey 1853), *P. balcanica* Scheerpeltz 1958, and *P. austriaca* Scheerpeltz 1959, all of them macrophthalmous. According to this key, the only character separating *P. austriaca* from *P. balcanica* is eye size. Some additional, but less evident characters are indicated in the original description of *P. austriaca*. *Platyola balcanica* has been recorded from several Balkan countries, whereas *P. austriaca* has become known only from Austria, the Czech Republic, Hungary (Smetana 2004).

An examination of *Platyola* material recently collected with endogean pitfall traps in Greece by Pier Mauro Giachino (Torino) and Dante Vailati (Brescia) revealed remarkable variation in eye size, and based on the descriptions and keys in the literature, it was difficult to decide if the specimens referred to *P. balcanica*, *P. austriaca*, or an undescribed species. In order to clarify the specific identity of the material, the type material of both species was examined.

Material and methods

The material referred to in this study is deposited in the following public and private collections:

NHMW Naturhistorisches Museum Wien (H. Schillhammer)
 cAss..... author's private collection
 cWun..... private collection Paul Wunderle, Mönchengladbach

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). For the photographs a digital camera (Nikon Coolpix 995) was used.

The map was generated using the online generic mapping tool (GMT) of the Geomar website at www.aquarius.ifm-geomar.de/omc.

Results

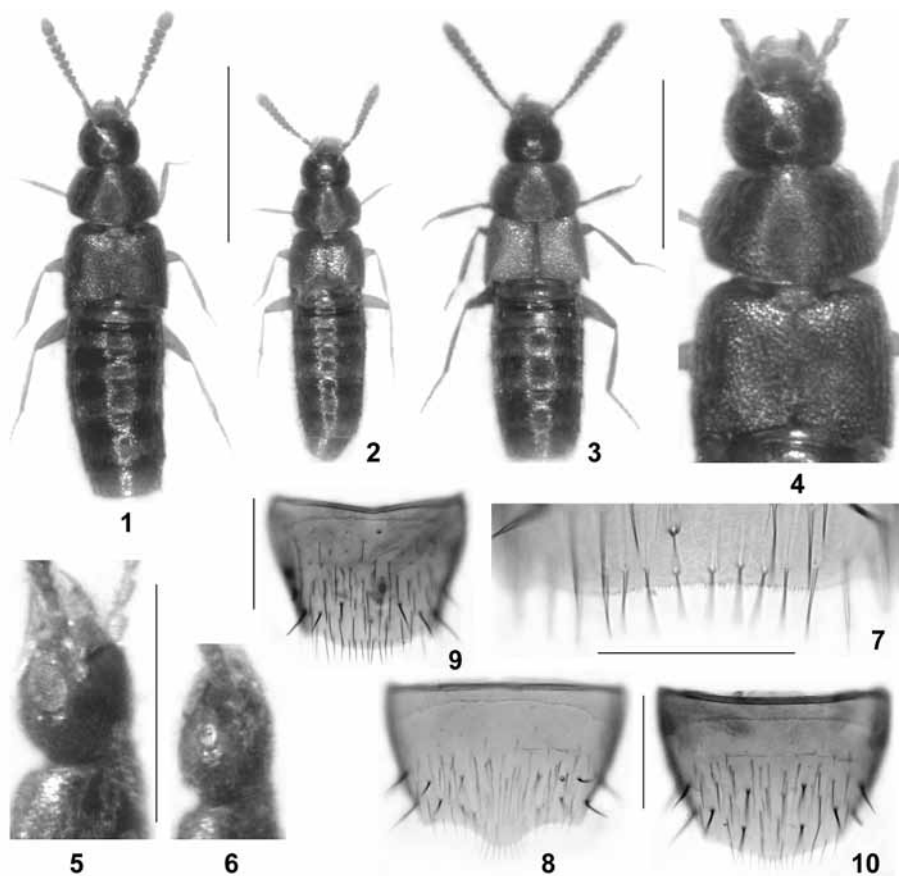
Platyola balcanica Scheerpeltz 1958 (Figs 1-15, Map 1)

Platyola balcanica Scheerpeltz 1958: 430 ff.

Platyola austriaca Scheerpeltz 1959: 11 ff.; **nov.syn.**

Type material examined: *P. balcanica*: Lectotype ♂, present designation: "♂ / Mittel-Griechenland, Dr. M. Beier, 6.VI.33 / Nisista, Xeravuni, 750-800 m, Gesiebe / Typus *Platyola balcanica* O. Scheerpeltz / ex coll. Scheerpeltz / Lectotypus ♂ *Platyola balcanica* Scheerpeltz, desig. V. Assing 2008 / *Platyola balcanica* Scheerpeltz, det. V. Assing 2008" (NHMW). Paralectotypes: 1 ♀: same data as lectotype (NHMW); 2 exs.: "Kruja, Alban., Mader / *Platyola* nov.sp. / *Cotypus Platyola balcanica* O. Scheerpeltz / ex coll. Scheerpeltz" (NHMW); 1 ex.: "Mal i Dajtit, Alb. Strupi / *Cotypus Platyola balcanica* O. Scheerpeltz / ex coll. Scheerpeltz" (NHMW); 1 ex.: "Dalm. Castelnuovo, Hilf 1910, Coll. O. Leonhard / *Cotypus Platyola balcanica* O. Scheerpeltz / ex coll. Leonhard" (NHMW).

P. austriaca: Lectotype ♂, present designation: "♂ / Umg. Vöslau, Niederösterreich / Typus *Platyola austriaca* O. Scheerpeltz / ex coll. Scheerpeltz / Lectotypus ♂ *Platyola austriaca* Scheerpeltz, desig. V. Assing 2008 / *Platyola balcanica* Scheerpeltz, det. V. Assing 2008" (NHMW). Paralectotypes: 1♂: same data as lectotype (NHMW); 3♀♀: "Bisamberg, Au. i., Schweiger / *Cotypus Platyola austriaca* O. Scheerpeltz / ex coll. Scheerpeltz" (NHMW); 1 ex.: "Vöslau, Austria / *Platyola fuscicornis* [sic], det. Kaiser / leg. Paganetti / *Cotypus Platyola austriaca* O. Scheerpeltz / ex coll. Scheerpeltz" (NHMW); 1 ex.: "A. i. Scheerpeltz, Lainzer Tiergarten / an ausfließendem Eichen-Baumsaft / 13.6.1948 / *Cotypus Platyola austriaca* O. Scheerpeltz / ex coll. Scheerpeltz" (NHMW).



Figs 1-10: *Platyola balcanica* SCHEERPELTZ: (1-3) habitus (1-2: Turkey; 3: lectotype of *P. balcanica*); (4) forebody; (5-6) head in lateral view of macrophthalmous (5) and microphthalmous specimen (6); (7) posterior margin of male tergite VIII; (8) male sternite VIII; (9) female tergite VIII; (10) female sternite VIII. Scale bars: 1-3: 1.0 mm; 4-6: 0.5 mm; 8-10: 0.2 mm; 7: 0.1 mm.

Additional material examined: Hungary: 1 ex., Villanyi mts., Vokány, car-net, 13.V.1999, leg. Ziegler (cAss). Croatia: 1 ex., Istra, Mt. Učka, 900 m, 4.VIII.2001, leg. Schuh (cAss); 2 exs., Josipdol-Karlovac, car-net, 9.V.1990, leg. Wunderle (cWun). Bosnia-Herzegovina: 1 ex., Kraljeva-Moštre, car-net, 5.V.1990, leg. Wunderle (cWun). Greece: 1 ex., Evritania, Oros Kokínias, above Livadáki, 1495 m, endogean pitfall trap, 9.VI.2006-12.VI.2007, leg. Giachino & Vailati (cAss); 2 exs., Etolia-Arkanania, Oros Oxia, road Mandrini-Levadáki, 780 m, endogean pitfall trap, 9.VI.2006-10.VI.2007, leg. Giachino & Vailati (cAss); 1 ex., Ahaia, Oros Panahaiko, above Paraskevi, 1150 m, endogean pitfall trap, VI.2005-VI.2006 leg. Giachino & Vailati (cAss). Turkey: 2 exs., Kahramanmaraş, 14 km SW Türkoğlu, 37°21'N, 36°44'E, 850 m, dry grassland, rotting subterranean parts of dead *Asphodelus* sp. and the surrounding soil sifted, 19.IV.2005, leg. Brachat & Meybohm (cAss).

Comment: The original description of *P. balcanica* is based on two syntypes ("1 ♂, 1 ♀, Typen") from "Nisista, Xerovuni" and an unspecified number of syntypes from "Süddalmatien, Herzegowina, Montenegro, Nordalbanien" (SCHEERPELTZ 1958). According to SCHEERPELTZ (1959), the syntype series of *P. austriaca* consists of two specimens ("1 ♂, 1 ♀, Typen") from "Bad-Vöslau" and an unspecified number of specimens from "Perchtholdsdorf bei Wien", "Gebiete des sogenannten 'Lainzer Tiergartens' bei Wien", and "Gebiete des Bisamberges bei Wien". Two males in good condition from the type series of *P. balcanica* and *P. austriaca*, respectively, are designated as the lectotypes.

An examination of the type material of both *P. balcanica* and *P. austriaca*, as well as of the additional material listed above revealed a pronounced variation of external characters. The genitalia, however, are identical (Figs 11-15), suggesting that the observed variation of size, body shape, coloration, and eye size is an expression of intra- rather than interspecific variation. Consequently, *P. austriaca* is placed in synonymy with *P. balcanica*.

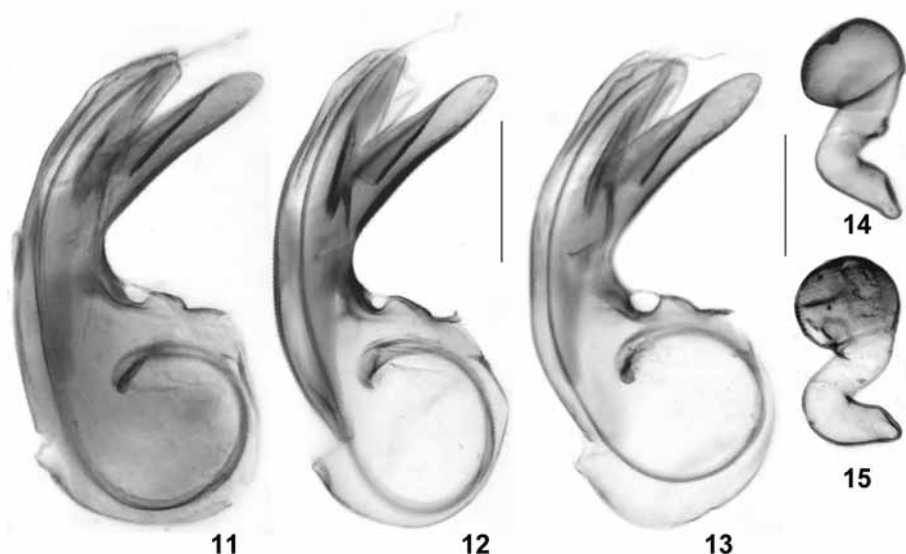
Sexual characters: ♂: posterior margin of tergite VIII weakly concave in the middle and with microsetae (Fig. 7); posterior margin of sternite VIII distinctly produced in the middle (Fig. 8); aedeagus as in Figs 11-13.

♀: posterior margin of tergite VIII broadly convex (Fig. 9); posterior margin of sternite VIII weakly angled in the middle (Fig. 10); spermatheca as in Figs 14-15.

Intraspecific variation: External characters such as body size, body shape, coloration, and particularly eye size are subject to enormous variation. For an illustration of the variation of body size and body shape see the illustrations of two specimens collected in one sample in southern Turkey and of the lectotype of *P. balcanica* (Figs 1-4).

Most of the examined specimens have the following coloration: head dark-brown; pronotum reddish-brown to yellowish-brown; elytra, legs, and antennae yellowish to reddish-yellow; abdomen reddish to reddish-brown. However, the coloration is highly variable and the body may be paler (more or less uniformly yellowish) or darker (dark-brownish).

Remarkably, the species is subject to a pronounced ophthalmo-polymorphism. In microphthalmous specimens the eyes are composed of approximately 15-20 ommatidia and distinctly less than half as long as the postocular region in lateral view (Fig. 6), whereas in macrophthalmous beetles the eyes are composed of more than 100 ommatidia and approximately as long as the postocular region (Fig. 5). These extreme forms are linked by transitional conditions. There is no evidence that the variation of eye size is sex-related. The genitalia of macro- and microphthalmous morphs are identical.

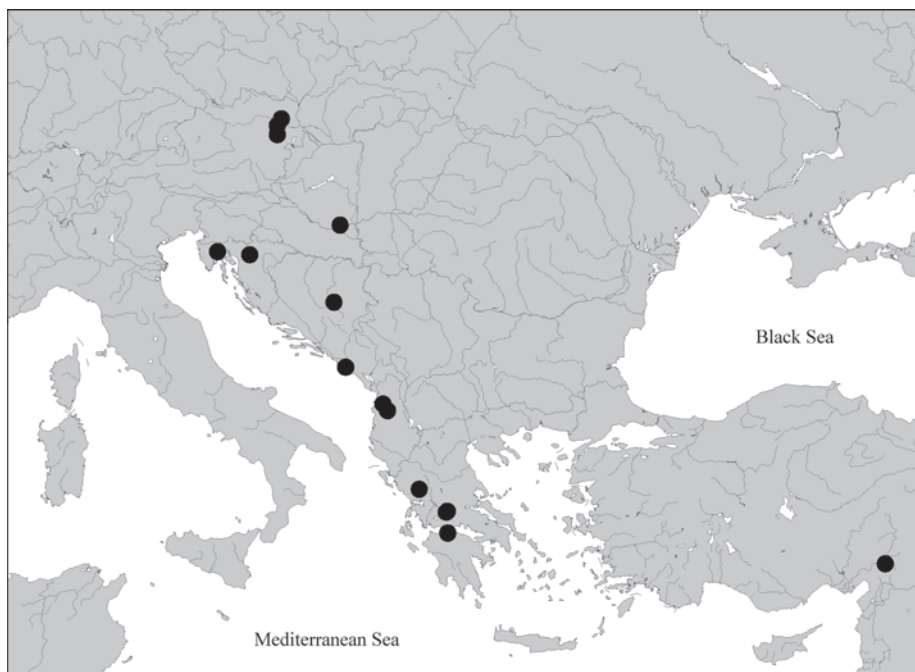


Figs 11-15: *Platyola balcanica* SCHEERPELTZ: (11-13) aedeagus of lectotype of *P. balcanica* (11), and of lectotype (12) and paralectotype (13) of *P. austriaca*; (14-15) spermatheca of paralectotype of *P. austriaca* (14) and of female from Turkey (15). Scale bars: 0.1 mm.

Distribution and bionomics: *Platyola balcanica* is evidently a Ponto-Mediterranean species, its known distribution ranging from southern Turkey across the Balkans to southeastern Central Europe (Map 1). In addition to the countries listed above, the species has reliably been recorded from the Czech Republic (as *P. austriaca*) and Yugoslavia (LOHSE 1974; SMETANA 2004). Previous records of *P. fusicornis* from Croatia (NOVAK 1952; ROUBAL 1913) probably refer to *P. balcanica*. It has been reported also from Kazakhstan (KASHCHEEV 1995), but the currently known distribution pattern suggests that this record is probably based on a misidentification.

The specimens from Kahramanmaraş represent the first record from Turkey. For an additional record from the Pelopónnisos, Greece, see PACE (2005).

According to SCHEERPELTZ (1958, 1959), the type material of *P. balcanica* and *P. austriaca* was collected from the leaf litter of a mixed sycamore and acorn forest, from subterranean vegetable refuse (placed there as bait for subterranean beetles), compost, and oak sap exudations. Most of the additional material listed above was collected either with subterranean pitfall traps or on the wing with car-nets; the specimens from Turkey were sifted from the rotting subterranean parts of *Asphodelus* sp., together with the type material of the anophthalmous *P. caeca*. Flying specimens were collected in May; they are all macrophthalmous. These observations suggest that *P. balcanica* has a cryptic endogean habitat and macrophthalmous specimens disperse by flight. The altitudes range from approximately 200 m to 1500 m.



Map 1: Distribution of *Platylola balcanica* SCHEERPELTZ, based on revised records.

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Zusammenfassung

Platylola austriaca SCHEERPELTZ 1959, nov.syn., wird mit *P. balcanica* SCHEERPELTZ 1958 synonymisiert. Für *P. balcanica* und *P. austriaca* werden Lectotypen designiert. Die intra-spezifische Variabilität äußerer Merkmale wie Körpergröße, Gestalt, Färbung und insbesondere Augengröße ist beachtlich. Die Genitalien und äußeren Merkmale von *P. balcanica* werden abgebildet. Die verfügbaren ökologischen Daten werden zusammengestellt und die Verbreitung der pontomediterranen Art wird anhand einer Karte illustriert. *Platylola balcanica* wird erstmals aus der Türkei nachgewiesen.

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